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Clarion®

Amplifiers

APX640.4/APX640.2/APX320.2/DPX1001.1

Owner/Installation Manual

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Dear Customer,

Congratulations on your purchase of the world's finest brand in the mobile electronic industry. At Clarion we are committed to high-quality music reproduction, and we are confident that you will be pleased with your purchase. Clarion's extensive history in the mobile electronic industry translates into products that are built to the highest of standards. These products provide optimum performance, which we are sure you will enjoy for years to come. Thank you for making Clarion your car audio brand.

For maximum performance Clarion recommends having your amplifier installed by an authorized Clarion dealer. Please read your warranty statement and retain your original sales receipt as proof of purchase.

To learn more about Clarion' complete line of car audio products, please visit us at our Web site

www.clarion.com

WARNING

Exposure to continuous sound levels of 85dB or higher may result in hearing loss. Clarion products are capable of producing high sound pressure levels, but please use your product at reasonable levels. Please observe all local sound ordinances for your safety during the operation of your vehicle.

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DESCRIPTION

Clarion has crafted its car audio amplifier to fit a variety of system configurations. The following is a list of features:

- Full frequency response with low distortion and exceptional signal-to-noise performance.
- Advanced circuitry design features bridgeable outputs for use in a variety of applications.
- Independent electronic crossovers, each with a 12dB (12/24dB - DPX1001.1) per octave slope and full adjustment range from 50Hz to 5.8KHz, (50Hz to 580Hz - DPX1001.1) to aid in audio system design.
- Bass boost circuit to reinforce low frequency signals that may be lost due to subwoofer box design.
- Adjustable input level controls with ground loop isolation, accepting a wide range of input signals.
- Remote turn-on with "soft start" muting to prevent turn-on "thump".
- Protection circuits for overheating and speaker shorts.
- 2-ohm load capable to drive a variety of speaker systems.
- Gold-plated input/output connectors and an external automotive- type fuse.
- Aluminum heat sink for efficient heat dissipation.
- Low profile, compact size to accommodate space limitation.

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INSTALLATION

This section lists mounting and wiring precautions prior to installing the Clarion amplifier. These safeguards provide enough detail to complete an installation successfully. Do not attempt to install the amplifier yourself, if you do not have the necessary skills. Instead, see your authorized Clarion dealer for installation recommendations.

MOUNTING PRECAUTIONS

Although the Clarion amplifiers incorporate heat sinks and protection circuits, mounting the amplifier in a tight space without any air movement will result in damage to the amp's internal circuitry over time. Choose a site that provides adequate ventilation around the amplifier. For easy system setup, mount the amplifier so the front-panel controls are accessible after installation.

In addition, observe the following precautions:

1. For the most efficient cooling, mount the amplifier so cool air runs along the length of the fins rather than across them. Remember, any moving air will dissipate heat.

2. Mount the amplifier on a rigid surface. Avoid mounting to subwoofer enclosures or areas prone to vibration. Do not install the amplifier on plastic or other combustible materials.

3. Prior to drilling, make sure proposed mounting holes will not cut into the fuel tank, fuel lines, brake lines (under chassis), or electrical wiring.

WIRING PRECAUTIONS

Read all wiring precautions. If you are not sure of the connections, contact your authorized Clarion dealer.

1. Before installation, make sure the source unit's Power switch is in the OFF position.

2. Disconnect the negative (-) lead of the battery before making any power connections.

3. When making connections, be sure that each connection is clean and secure. Insulate final connections with electrical tape or shrink tubing. Failure to do so may result in damage to your equipment.

4. A secure, clean ground connection is critical to the performance of your Clarion amplifier. Use the shortest ground wire possible and securely connect to the vehicle's chassis to minimize resistance and avoid noise problems. Be sure to clean off any paint prior to making this connection.

5. Add an external fuse on the amplifier's positive (+) power lead and connect it as close as possible to the vehicle's (+) battery terminal. Use a fuse rated to the total current consumption of the amplifier(s). Adding an external fuse will protect the electrical system from short circuits that can result in a fire.

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INPUT CONNECTIONS AND AUDIO CONTROL

Clarion amplifiers contain connections for RCA Inputs and Audio Control as shown below.

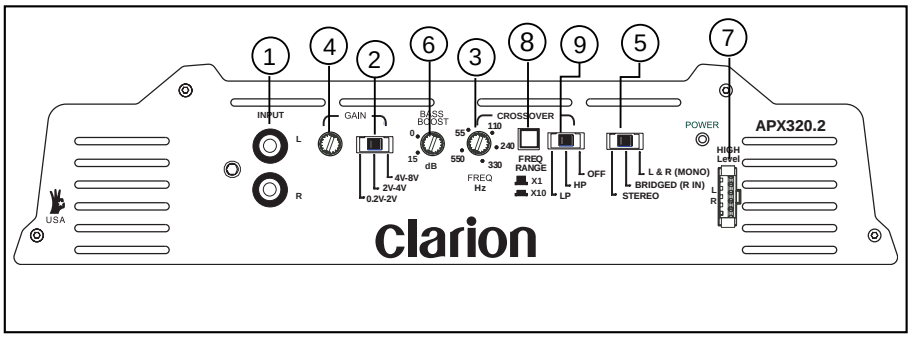

Figure 1-1 APX320.2 Input Connections and Audio Control

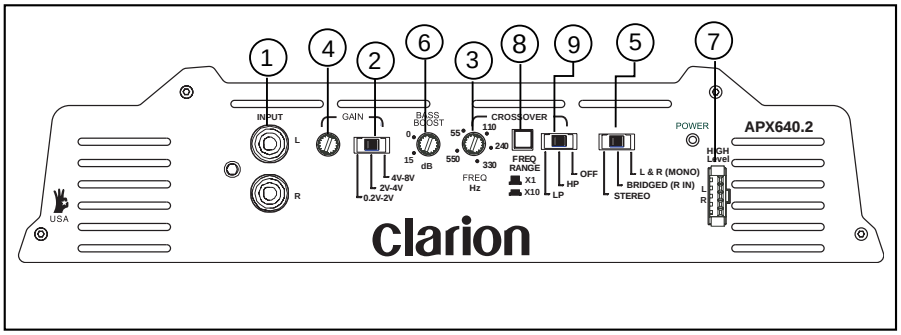

Figure 1-2 APX640.2 Input Connections and Audio Control

1. RCA Input Jacks
2. Input Voltage Selector
3. Precise Frequency Selector
4. Gain Control
5. Input Mode
6. Bass Boost Control
7. Speaker Level Inputs
8. Frequency Multiplier
9. X-Over Mode Switch

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INPUT CONNECTIONS AND AUDIO CONTROL

Clarion amplifiers contain connections for RCA Inputs and Audio Control as shown below.

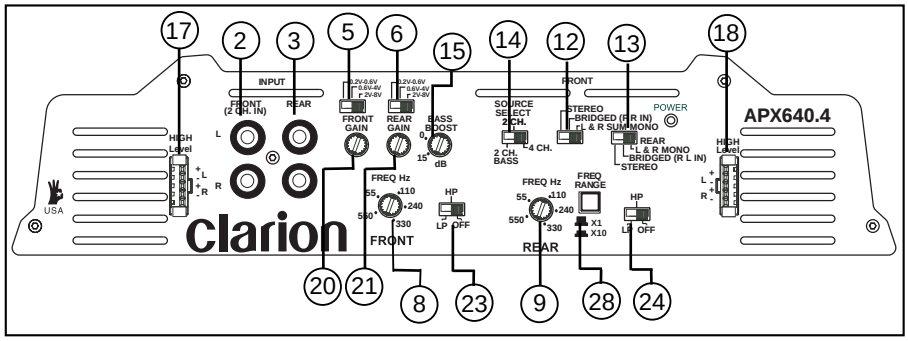

Figure 2-1 APX640.4 Input Connections and Audio Control

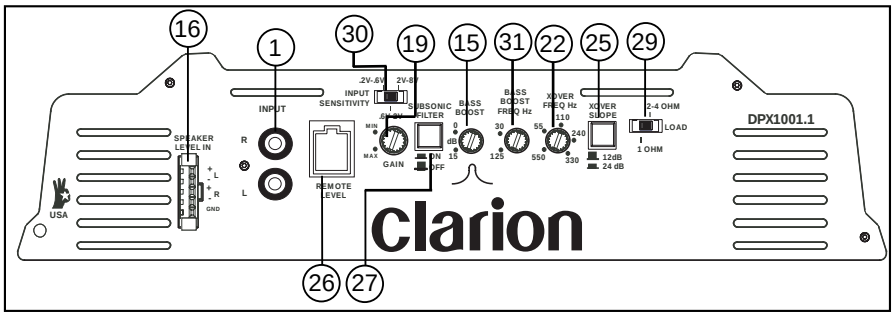

Figure 2-2 DPX1001.1 Input Connections and Audio Control

1. RCA Input Jacks
2. Front RCA Input Jacks
3. Rear RCA Input Jacks
4. Input Voltage Selector
5. Front Input Voltage Selector
6. Rear Input Voltage Selector
7. Precise Frequency Selector
8. Front Precise Frequency Selector
9. Rear Precise Frequency Selector
12. Front Input Mode
13. Rear Input Mode
14. Rear Input Selector
15. Bass Boost Control
16. Speaker Lever Inputs
17. Front Speaker Level Inputs
18. Rear Speaker Level Inputs
19. Gain Control
20. Front Gain Control
21. Rear Gain Control
22. X-Over Mode Switch
23. Front X-Over Mode Switch
24. Rear X-Over Mode Switch
25. X-Over Slope
26. Remote Level Control Port
27. Subsonic Filter
28. Frequency Range Multiplier
29. Impedance Load Selector
30. Input Sensitivity
31. Bass Boost Frequency

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The Input Connections are gold-plated RCA Jacks. The Gain Controls provide a wide adjustment range to accommodate output levels from any source unit brand.

Precise Frequency Selector
The filter frequency markings on the front panel of the amplifier are for reference purposes. If you would like to select the filter frequency with a higher level of precision, consult the chart in Figure 3 on this page. This chart gives you a more accurate frequency for each of the forty-one detented positions of the frequency selection control.

• Gain Controls with Selectable Input Voltage
There are 2 settings for the "Gain" that must be adjusted in order to maximize the power output of the amplifier. The first step is to select the proper input voltage and the second step is to adjust the Gain dial.

• Input Voltage Selector
A wide range of signal input voltages can be accommodated by the APX320.2, APX640.2, APX640.4 and DPX1001.1 input section (200mV - 8V). This wide range is split up into three ranges, Figure 2, accessible via switches located in the "Gain" of the amplifier. The "0.2V-0.6V" position on the switch selects an input sensitivity range between 200mV and 600mV, the "0.6V-2V" position on the switch selects an input sensitivity range between 600mV and 2V and the "2V-8V" position on the switch selects an input sensitivity range between 2V and 8V. This means that the "Gain" rotary control will operate within that voltage window. If you are using an aftermarket source unit with RCA outputs, make sure you select the proper voltage selection range. For example, if the RCA voltage of the aftermarket head unit is rated at 4 volts, set the switch at "2V-8V".

Detent Number	Actual Freq.
01	50
02	53
03	53
04	54
05	58
06	60
07	65
08	70
09	76
10	80
11	88
12	100
13	110
14	125
15	137
16	150
17	156
18	168
19	173
20	186
21	202
22	212
23	231
24	256
25	273
26	297
27	320
28	359
29	395
30	439
31	466
32	501
33	517
34	522
35	536
36	555
37	566
38	582
39	582
40	582
41	582

Figure 3 - Detent Chart

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• **Load Selector**
Please note that when configuring the DPX1001.1 amplifier, the **LOAD SELECTOR** switch must be set in the correct position in order for the amplifier to function properly. **Please refer to the chart below for specific settings.**

SUBWOOFER IMPEDANCE	LOAD SELECTOR SWITCH SETTING
2-OHM Bridged Load	1 OHM
4~8-OHM Bridged Load	2-4 OHM
1-OHM Load on each output	1 OHM
2-OHM Load on each output	2-4 OHM
4 OHM Load on each output	2-4 OHM

• **Gain Dial**
Located next to the input voltage selector, is a rotary control labeled "Gain". Once the appropriate input voltage range has been selected, this rotary control can be used to match the source unit's output voltage to the input stage of the amplifier for maximum clean output. Rotating the control clockwise will result in higher sensitivity (louder for a given input voltage). Rotating the control counter-clockwise will result in lower sensitivity (quieter for a given input voltage). After using this procedure, you can then adjust the level of the amplifier by adjusting the input sensitivity downward, if the amplifier requires attenuation to achieve the desired system balance. Do not increase the "Gain" setting for any amplifier in the system beyond the maximum level. Doing so will result in audible distortion and possible speaker damage.

• **Bass Boost Control**
The amplifier also features a “high-Q” (i.e., narrow frequency band) Bass Boost circuit. It acts much like an equalizer with a switchable gain fixed at 45Hz. Use this feature to tune low-frequency audio response to compensate for a less than ideal subwoofer enclosure design. The added boost produces rich, full bass tones that are normally difficult to reproduce in the car audio environment. NOTE: If Bass Boost is undesired, set Bass Boost to OFF.

• **X-Over Mode Switches** - These switches are equipped with 12dB per octave electronic filters for precise frequency attenuation with minimal phase distortion. Each filter is activated by sliding the X-Over Mode Switch to either HP or LP.

• **Speaker Level Inputs** - These provide connections for a high-level stereo source. These connections are provided for installations when the source unit does not have RCA outputs.

WARNING:
When using the speaker (high-level) inputs, the Black wire must be grounded at the radio. Failure to do so will result in noise and/or improper operation.

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CONNECTIONS FOR POWER AND SPEAKERS

The rear panel of Clarion's amplifiers contain power and speaker connections as shown below.

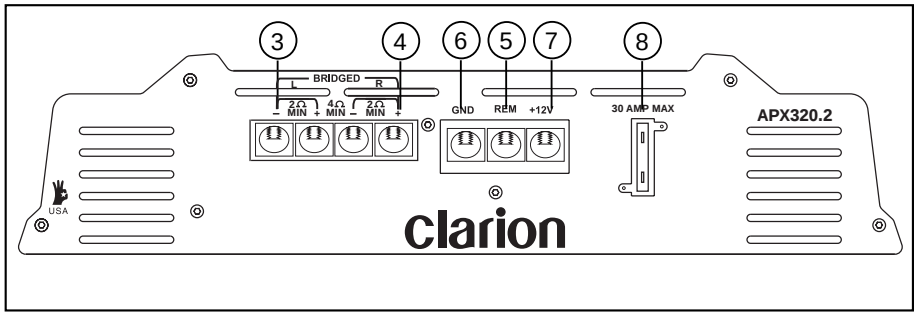

Figure 4-1 APX320.2 Connections for Power and Speakers

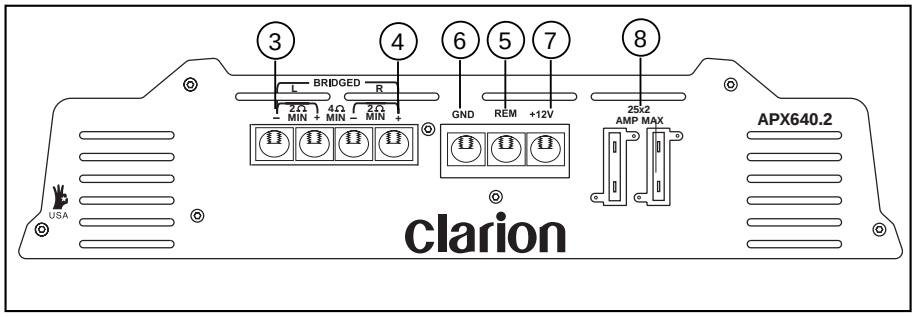

Figure 4-2 APX640.2 Connections for Power and Speakers

1. Left Front Speaker Output
2. Right Front Speaker Output
3. Left Speaker Output
4. Right Speaker Output
5. Remote Turn-On Input
6. Ground Input
7. Battery + 12V Input
8. Fuse
9. Left Rear Speaker Output
10. Right Rear Speaker Output

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CONNECTIONS FOR POWER AND SPEAKERS

The rear panel of Clarion's amplifiers contain power and speaker connections as shown below.

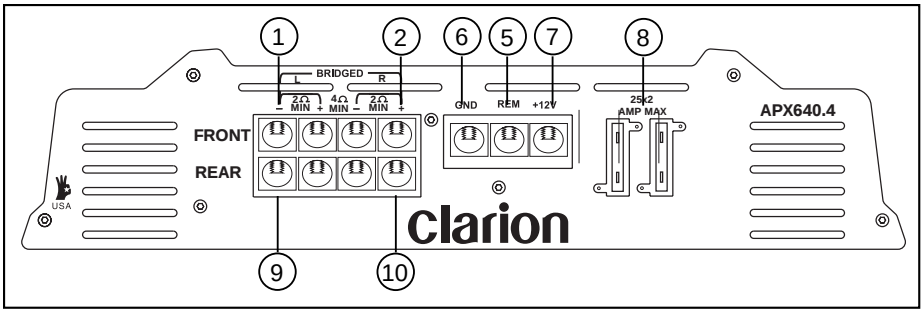

Figure 5-1 APX640.4 Connections for Power and Speakers

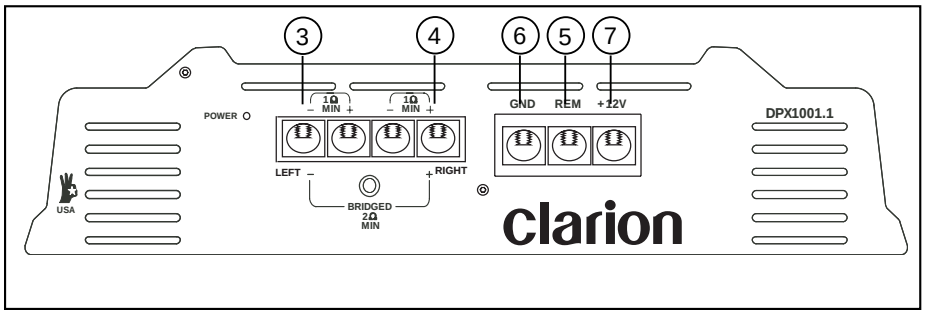

Figure 5-2 DPX1001.1 Connections for Power and Speakers

1. Left Front Speaker Output
2. Right Front Speaker Output
3. Left Speaker Output
4. Right Speaker Output
5. Remote Turn-On Input
6. Ground Input
7. Battery + 12V Input
8. Fuse
9. Left Rear Speaker Output
10. Right Rear Speaker Output

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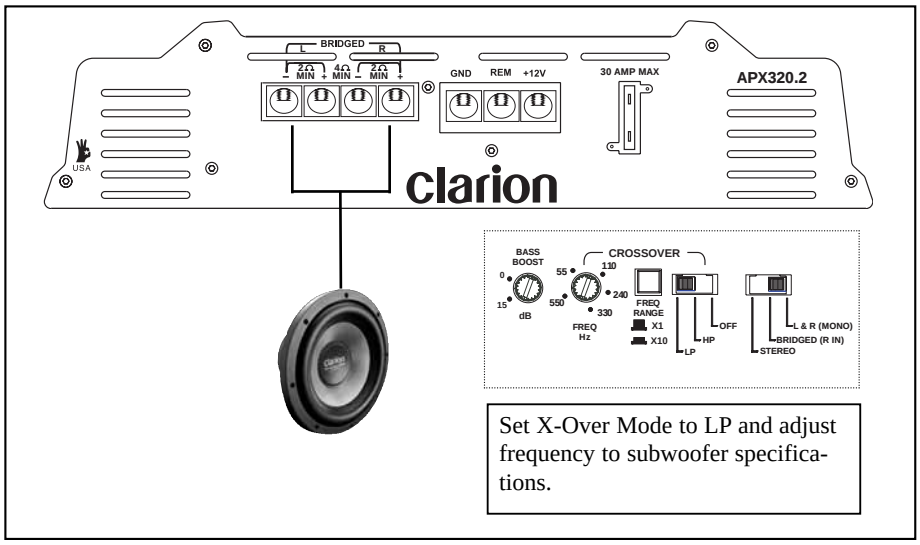
Bridged-Mono Subwoofer System



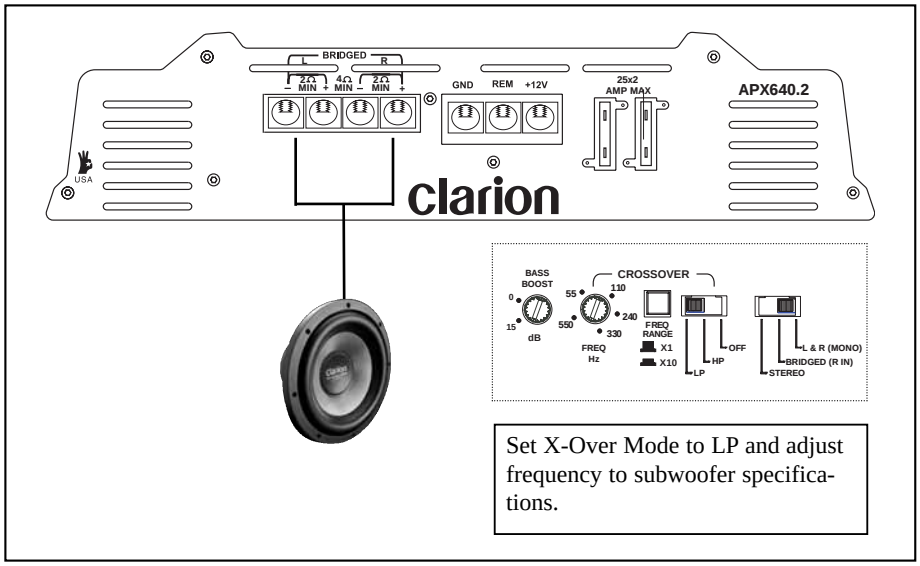


Figure 6 - In this application, the amplifier is bridged for mono operation to drive a subwoofer.

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2-Channel Full-Range or Subwoofer System
(APX320.2 or APX640.2)

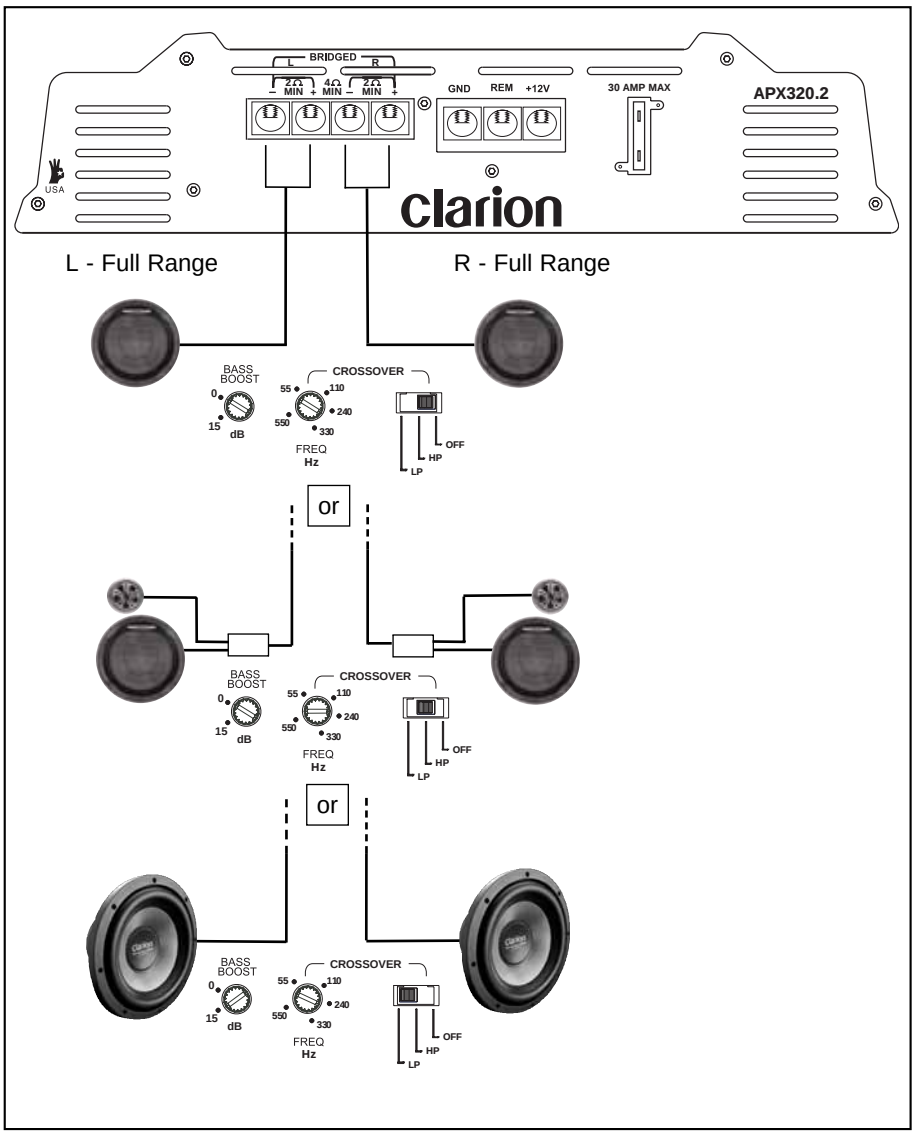

Figure 7 - In this application, the amplifier is used in stereo and drives two full-range (or satellite, or subwoofer) speakers.

NOTE: A passive crossover must be used with satellite speakers.

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4-Channel High Power System

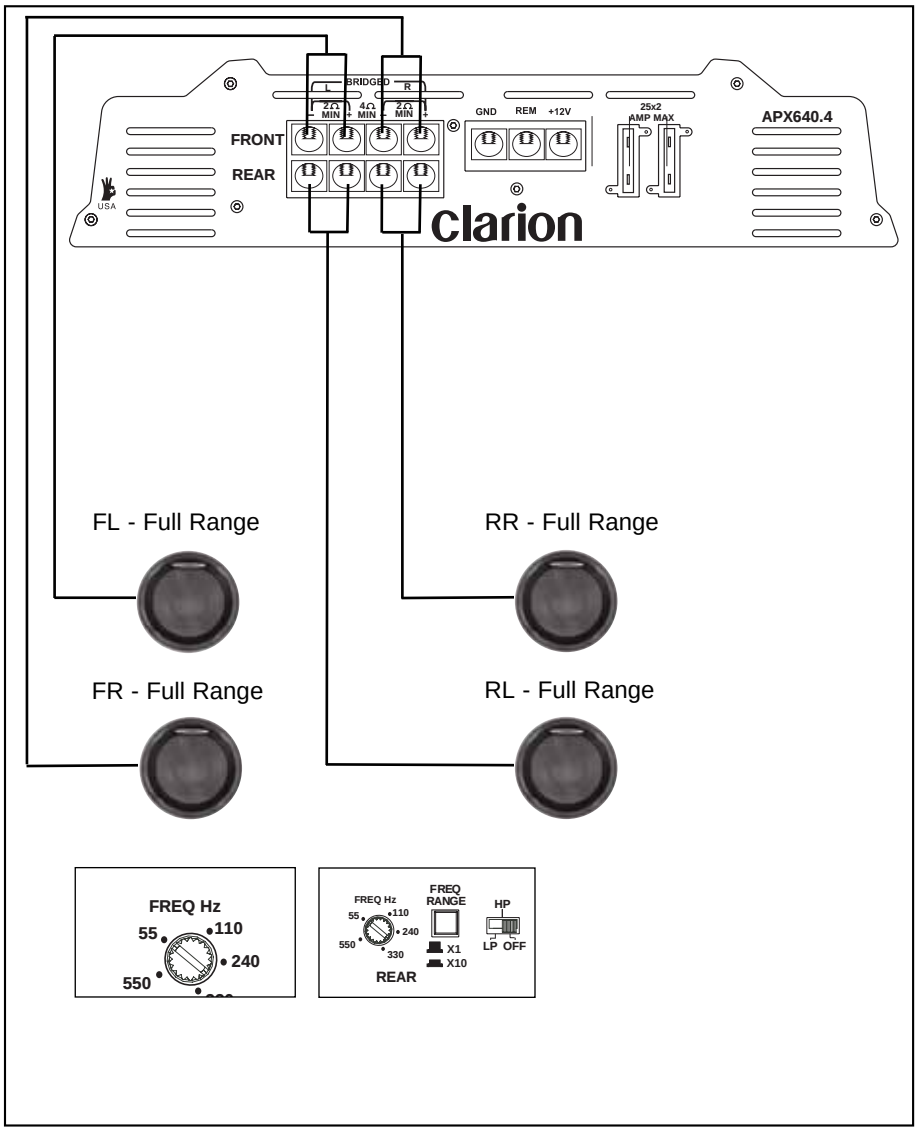

Figure 8 - In this application, the APX640.4 is used as a 4-channel amplifier to drive four full-range speakers in stereo.

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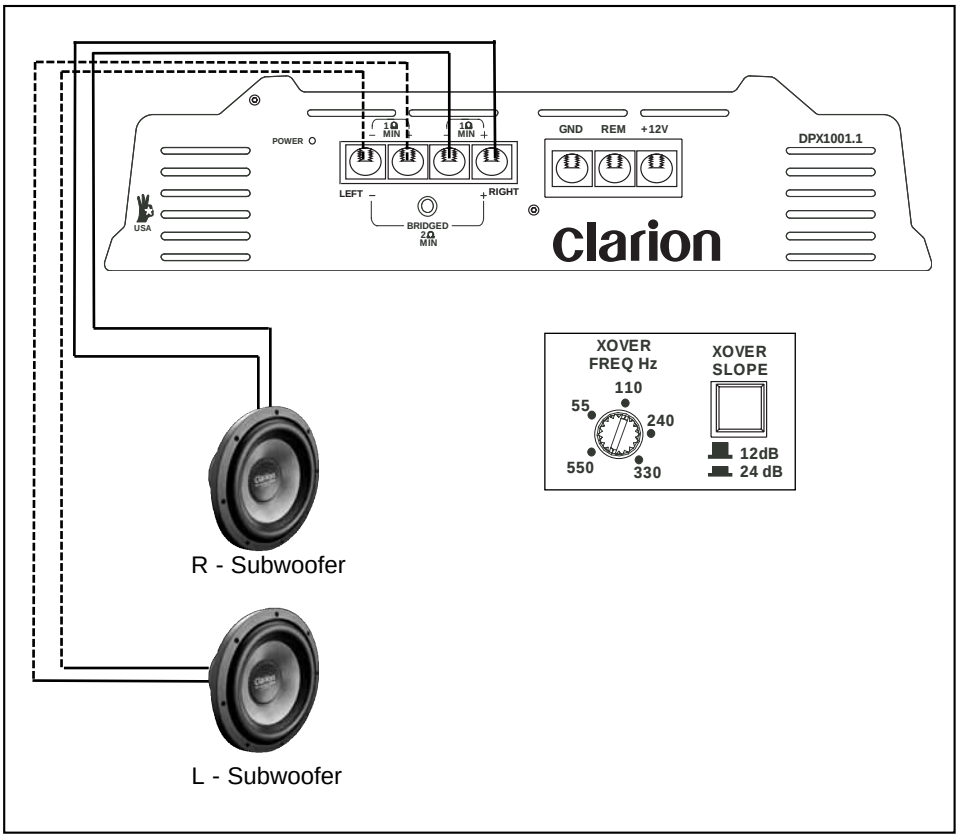

Figure 9 - In this application, the DPX1001.1 is used to drive a pair of subwoofers.

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SETTING THE GAIN

After completing the installation, follow these steps to set the Gain Control and then perform the Final System Checks.

1. Turn the Gain Control all the way counter-clockwise.

2. Select the proper input voltage as described on page 7, (Gain Control with Selectable Input Voltage)

3. Turn the vehicle's Ignition Switch to the ON position. Then turn the ON/OFF Switch on the source unit to the ON position. Set all Tone or Equalization Controls to "flat" positions and turn Loudness off.

4. Play a CD or Tape and set the Volume Control at 75% of full level.
   NOTE: If the system uses an equalizer set all frequency controls to the "flat" position.

5. Slowly increase the Gain Control. Stop when you hear a slight distortion of audio.

SETTING THE CROSSOVER

The Clarion amplifiers feature fully adjustable crossovers. To set the crossovers, follow these steps:

1. Using the X-Over Mode Switch, select the desired mode: LP for Low Pass, HP for High Pass or OFF for Full Range.

2. Using the Freq (Hz) Selection Control, select the desired frequency.

SETTING THE BASS BOOST

1. Initially set the Bass Boost control to its OFF position.

2. Listen to a variety of music styles (e.g., Rock, Rap, etc.) and switch the Bass Boost control ON until a noticeable increase in low bass response is realized.

CAUTION: If you hear a "pop" (due to speaker over-excursion) adjust switch to lower the Bass Boost to prevent speaker damage.

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FINAL SYSTEM CHECKS

1. Start the engine and turn on the source unit. After a two-second delay, slowly increase the volume control and listen to the audio. If you hear any noise, static, distortion or no sound at all, check the connections, and also refer to troubleshooting section below. Depending on your system design, the levels may become quite loud even at low volume control settings. Until you get an "audio feel" of the system's power, use care when adjusting controls.

2. Turn the balance controls to their extreme positions and listen to the results. Audio output should match control settings (audio from the left speaker when balance is left).

3. Increase the volume and verify that the amplifier reproduces audio (at full frequencies) without distortion. If you hear distortion, check the connections and verify that the gain control is set correctly. Another possibility is damaged speakers or underpowered speakers. Once again refer to troubleshooting section for additional help.

TROUBLESHOOTING

Problem
No Audio.
Solution
Low or no remote turn-on voltage: Check remote connections at amplifier and source unit.

Blown amplifier fuse: Replace with new fast-blow fuse (same rating).

Power wires not connected: Check battery and ground wiring at amplifier; also check battery connections.

Speaker leads shorted: Check speaker continuity to ground, it should not show a common ground.

Speakers not connected or are blown: Check speaker connections at amplifier, measure coil impedance.

Problem
Audio cycles on and off.
Solution
Thermal protection circuits are shutting amplifier off: Check location for adequate ventilation; consult an authorized Clarion Audio Dealer.

Problem
Distorted audio.
Solution
Gain is not set properly, or damaged speaker cones: Review Setting Gain; inspect each speaker cone for signs of damage (i.e., frozen cone, burning smell, etc.)

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Problem
Amplifier fuse keeps blowing.
Solution
Incorrect wiring or short circuit: Review Installation and check all wiring connections.

Problem
Whining or ticking noise in the audio with engine on.
Solution
Amplifier is picking up alternator noise or radiated noise: Turn down input gain and move audio cables away from power wires. Check power and ground connections on amplifier and install an in-line noise filter on source unit's power wire. Also check the alternator and/or voltage regulator. Test for weak battery or add water to battery.

PRODUCT SPECS

MODEL	APX320.2	APX640.2
Maximum Power Output	320	640
Continuous Power Output	80x2	160x2
THD @ Rated Output (%)	<.05%	<.05%
Sound to Noise Ration (A wtg)	>110dB	>110dB
Frequency Response(+/-1dB)	10Hz-50kHz	10Hz-50kHz
Line Level Input Sensitivity	200mV-8V	200mV-8V
Speaker Level Input Sensitivity	400mV to 16V	400mV to 16V
Input Impedance - Low Level	12k Ohms	12k Ohms
High Level	395 Ohms	395 Ohms
Output Impedance	2 Ohms Stereo	2 Ohms Stereo
	4 Ohms Bridged	4 Ohms Bridged

MODEL	APX640.4	DPX1001.1
Maximum Power Output	640	1000
Continuous Power Output	80x4	250x2
THD @Rated Output (%)	<.05%	<.05%
Sound to Noise Ration (A wtg)	>110dB	>95dB
Frequency Response (+/-1dB)	10Hz-50kHz	10Hz-50kHz
Line Level Input Sensitivity	200mV-8V	200mV-8V
Speaker Level Input Sensitivity	400mV to 16V	400mV to 16V
Input Impedance - Low Level	12k Ohms	12k Ohms
High Level	395 Ohms	395 Ohms
Output Impedance	2 Ohms Stereo	1 Ohms Stereo
	4 Ohms Bridged	2 Ohms Bridged

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This product is warranted against all defects in material workmanship for a period of one year from the date of original purchase. Clarion ProAudio products, except for speakers, are covered by a two-year warranty when installed by an authorized Clarion dealer. The conditions of this warranty and the extent of responsibility of Clarion Corporation under this warranty are as follows:

1. PROOF OF DATE OF PURCHASE WILL BE REQUIRED FOR WARRANTY SERVICE OF THIS PRODUCT. IN CASE OF 2-YEAR WARRANTY FOR CLARION PROAUDIO PRODUCT, PROOF OF INSTALLATION BY AUTHORIZED DEALER IS REQUIRED. INFORMATION ABOUT CLARION AUTHORIZED WARRANTY SERVICE CENTERS MAY BE OBTAINED BY CONTACTING OR WRITING CLARION CORPORATION AT THE ADDRESS LISTED BELOW.

2. This warranty will become void if service performed by anyone other than an approved Clarion Warranty Service Center results in damage to product.

3. This warranty does not apply to any product which has been subject to misuse, neglect or accident, or which has had the serial number altered, defaced or removed, or which has been connected, installed, adjusted or repaired in a manner that is not in accordance with the instructions furnished by Clarion Corporation.

4. This warranty does not cover car static or other electrical interferences, tape head cleaning or adjustments, or labor costs for the removal or reinstallation of the unit for repair.

5. The sole responsibility of Clarion Corporation under this Warranty shall be limited to the repair or replacement thereof, at the sole discretion of Clarion Corporation.

6. If it becomes necessary to send the product or any defective part to Clarion Corporation or an authorized warranty service station, the product must be shipped in its original carton or equivalent carton, fully insured, with shipping charges prepaid. Clarion Corporation will not assume any responsibility for any loss or damage incurred in shipping.

7. ALL IMPLIED WARRANTIES EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW SHALL HAVE NO GREATER DURATION THAN THE WARRANTY PERIOD SET FORTH ABOVE. UNDER NO CIRCUMSTANCES SHALL CLARION CORPORATION BE LIABLE FOR ANY LOSS OR DAMAGE, DIRECT OR CONSEQUENTIAL, ARISING OUT OF THE USE OR INABILITY TO USE THE PRODUCT. BECAUSE SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS OR EXCLUSIONS OR LIMITATIONS OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.

8. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

9. For instructions on how to obtain warranty service, please call **1-800-668-5612** or visit our Web site at **www.clarion.com** for a listing of Authorized Warranty Service Centers in your area, or contact the Clarion Customer Service Manager at the address listed below:

Clarion Canada Inc.
2239 Winston Park Drive
Oakville, ON L6H 5R1

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Clarion®

Clarion Canada Inc.
2239 Winston Park Drive
Oakville, ON
L6H 5R1
1-800-668-5612
www.clarion.com

Clarion

OWNER'S MANUAL SUPPLEMENT

CLARION DPX1001.1

Please note that when configuring the DPX1001.1 amplifier, the LOAD SELECTOR switch must be set in the correct position in order for the amplifier to function properly.

Please refer to the chart below for specific settings.

SUBWOOFER IMPEDANCE	LOAD SELECTOR SWITCH SETTING
2-OHM Bridged Load	1 OHM
4~8-OHM Bridged Load	2-4 OHM
1-OHM Load on each output	1 OHM
2-OHM Load on each output	2-4 OHM
4 OHM Load on each output	2-4 OHM

If you need further assistance when configuring the DPX1001.1 please contact Clarion / UNGO Product Support at 1-800-668-5612 ext. 229